

**Remarks/Arguments:**

**Amendments**

The specification has been amended to include the filing date of the PCT application. The specification has also been amended to indicate that the application is a continuation-in-part of U.S. Application 09/090,484, filed June 3, 1998, now U.S. Pat. No. 6,090,505, issued July 18, 2000.

Support for the amendments to claims 1 and 8 is found in original claims 1 and 8. Claim 13 has been amended to more particularly point out and distinctly claim the subject matter that applicants regard as the invention and to agree with claim 1 on which it directly and indirectly depends. Claim 16 has been amended to more particularly point out and distinctly claim the subject matter that applicants regard as the invention and to agree with claim 14 on which it directly and indirectly depends. Support for newly added claim 21 is found in original claim 8. Support for newly added claim 22 is found in Table 1.

It is submitted that no new matter is introduced by these amendments and new claims.

**Information Disclosure Statement**

The Examiner's attention is called to a Supplemental Information Disclosure Statement submitted June 20, 2003, after the mailing date of the instant Office Action, and respectfully request that it be considered by the Examiner.

**Objection to the Specification**

The specification was objected to because the filing date of the international application was missing. The specification has been amended to include the international filing date. It is submitted that this objection has been overcome.

**Rejection under 35 USC 112**

Claims 1-9, 11, and 13 were rejected under 35 USC 112, first paragraph, as failing to comply with the written description requirement. Independent claims 1 and 8 have been amended to recite "said additional element selected from the group consisting of group 2 elements, transition elements, group 12 elements, group 13 elements and

group 14 elements exclusive of carbon, and exclusive of said element selected from the group consisting of tin, silicon, and zinc." It is submitted that this rejection has been overcome.

**Rejection under 35 USC 102(e)**

Claims 1-9, 11, and 13-20 were rejected under 35 U.S.C 102(e) as anticipated by Shimamura, U.S. Patent 6,090,505 ("Shimamura"). The application has been amended be a continuation-in-part of Shimamura. There are two common inventors: Harunari Shimamura and Yoshiata Nitta. The applications were co-pending. The international application for the instant application was filed November 30, 1999. The Shimamura application was filed June 3, 1998, and issued July 18, 2000. A new Declaration will be submitted in due course.

It is respectfully submitted that the rejection of claims under 35 U.S.C 102(e) as anticipated by Shimamura should be withdrawn.

**First Rejection under 35 USC 103(a)**

Claims 1, 3, 11, 13, 14, and 16 were rejected under 35 USC 103(a) as unpatentable over Saito, U.S. Patent 5,770,333 ("Saito"), in view of Kawakami, U.S. Patent 5,824,434 ("Kawakami"). This rejection is respectfully traversed.

The Office position is that since, in Saito, the same methods and starting materials are used to form the intermetallic alloy NiSi<sub>2</sub> powder, the intermetallic alloy NiSi<sub>2</sub> particles of Saito are inherently composite particles comprising a central portion consisting essentially of Si coated by an intermetallic compound comprising Si and Ni. Applicants submit that, for the following reasons, the particles of Saito are not inherently the same as the claimed particles.

**1. The methods of production are different**

As pointed out by the Office, Saito discloses vacuum melting followed by pulverizing under argon. Saito, column 7, lines 38-43. However, in one method for the preparation of the claimed particles, "a fused mixture of elements in a predetermined ratio is quenched and solidified. . ." Specification, page 9, lines 19-22. In another

method, solid phase B is formed on the surface of the powder of solid phase A. Specification, page 10, lines 3-5.

Neither of these methods is disclosed by Saito. Saito does not disclose a quenching step. Nor does Saito disclose forming a phase B on another phase A. Thus, the assertion that Saito and applicants use the same method to form particles is incorrect.

## **2. The structures are different**

Saito discloses that his  $\text{NiSi}_2$  product has a "CaF<sub>2</sub> type structure (inverse fluorite structure)." Saito, Table 1; column 7, lines 6-7, See also column 7, lines 43-47. There is no disclosure or suggestion of a two phase system.

In contrast, the claimed particles have a different structure. As disclosed in the specification, "An electron microscope observation confirmed these composite particles have part of or the whole surface of the solid phase A thereof covered with the solid phase B." Specification page 14, lines 11-13.

## **3. Saito's particles expand in the charged state**

Saito discloses that X-ray diffraction images of the negative electrodes in charged states show that the space lattice was uniformly expanded. Saito, column 10, line 63, to column 11, line 6. However, as disclosed in the instant specification, "The solid solution or the inter-metallic compound in the coating layer prevents significant changes in crystal structure, namely changes in volume of the nuclear particles caused by electrochemical intercalating and deintercalating of lithium. Specification, page 9, lines 12-16.

That the particles of Saito expand when intercalated with lithium demonstrates that they are not composite particles as recited by applicants' claims. The coating layer in applicants' particles prevents particles from expanding when charged.

For these reasons, Saito does not disclose or suggest applicants' composite particle. The methods of preparation are different, the resulting structures are different, and the properties are different.

Kawakami was cited for the disclosure of polymer gel electrolytes in lithium secondary batteries. The Office has not alleged that Kawakami discloses anything about the formation or structure of composite particles or their use in non-aqueous electrolyte secondary batteries.

The Office has not made the *prima facie* case. Composite particles as recited in applicants' claims are not disclosed or suggested by Saito. Therefore, combination of the references in the manner indicated by the Office does not produce applicants' invention because composite particles as recited by applicants' claims are missing from the combination. The rejection of claims 1, 3, 11, 13, 14, and 16 as unpatentable over Saito in view of Kawakami should be withdrawn.

**Second Rejection under 35 USC 103(a)**

Claims 1, 2, 4, 15, and 17 were rejected under 35 USC 103(a) as unpatentable over Saito in view of EP 730316 A1. This rejection is respectfully traversed.

As discussed above, Saito does not disclose or suggest applicants' composite particle. The methods of preparation are different, the resulting structures are different, and the properties are different.

EP 730316 A1 was cited for the disclosure of polyvinylidene homopolymer or polyvinylidene copolymer as the solid electrolyte material for a separator and for the positive and negative electrodes of a lithium battery with electrolyte material being present in the separator and in the electrodes. The Office has not alleged that EP 730316 A1 discloses anything about the formation or structure of composite particles or their use in non-aqueous electrolyte secondary batteries.

The Office has not made the *prima facie* case. Composite particles as recited in applicants' claims are not disclosed or suggested by Saito. Therefore, combination of the references in the manner indicated by the Office does not produce applicants' invention because composite particles as recited by applicants' claims are missing from the combination. The rejection of claims 1, 2, 4, 15, and 17 as unpatentable over Saito in view of EP 730316 A1 should be withdrawn.

**Third Rejection under 35 USC 103(a)**

Claims 6, 7, 19, and 20 were rejected under 35 USC 103(a) as unpatentable over Saito in view of Kawakami and further in view of Gies, U.S. Patent 5,665,265 ("Gies"). This rejection is respectfully traversed.

As discussed above, Saito does not disclose or suggest applicants' composite particle. The methods of preparation are different, the resulting structures are different, and the properties are different.

Kawakami was cited for the disclosure of polymer gel electrolytes in lithium secondary batteries. The Office has not alleged that Kawakami discloses anything about the formation or structure of composite particles or their use in non-aqueous electrolyte secondary batteries.

Gies was cited for the disclosure of polymer gel electrolytes that include a non-woven fabric of polyolefin polymers and that the polymer gel electrolyte can be polyethylene oxide, polymethyl methacrylate, and copolymers thereof. The Office has not alleged that Gies discloses anything about the formation or structure of composite particles or their use in non-aqueous electrolyte secondary batteries.

The Office has not made the *prima facie* case. Composite particles as recited in applicants' claims are not disclosed or suggested by Saito. Therefore, combination of the references in the manner indicated by the Office does not produce applicants' invention because composite particles as recited by applicants' claims are missing from the combination. The rejection of claims 6, 7, 19, and 20 as unpatentable over Saito in view of Kawakami and further in view of Gies should be withdrawn.

**Forth Rejection under 35 USC 103(a)**

Claims 5 and 18 were rejected under 35 USC 103(a) as unpatentable over Saito in view of Kawakami and further in view of St. Aubyn Hubbard, U.S. Patent 5,460,903 ("St. Aubyn Hubbard"). This rejection is respectfully traversed.

As discussed above, Saito does not disclose or suggest applicants' composite particle. The methods of preparation are different, the resulting structures are different, and the properties are different.

Kawakami was cited for the disclosure of polymer gel electrolytes in lithium secondary batteries. The Office has not alleged that Kawakami discloses anything about the formation or structure of composite particles or their use in non-aqueous electrolyte secondary batteries.

St. Aubyn Hubbard was cited for the disclosure of polymer gel electrolytes that comprise a polyester polymer for lithium batteries. The Office has not alleged that St. Aubyn Hubbard discloses anything about the formation or structure of composite particles or their use in non-aqueous electrolyte secondary batteries.

The Office has not made the *prima facie* case. Composite particles as recited in applicants' claims are not disclosed or suggested by Saito. Therefore, combination of the references in the manner indicated by the Office does not produce applicants' invention because composite particles as recited by applicants' claims are missing from the combination. The rejection of claims 5 and 18 as unpatentable over Saito in view of Kawakami and further in view of St. Aubyn Hubbard should be withdrawn.

#### **Fifth Rejection under 35 USC 103(a)**

Claims 8 and 9 were rejected under 35 USC 103(a) as unpatentable over Saito in view of Iwamoto, U.S. Patent 5,589,296 ("Iwamoto"). This rejection is respectfully traversed.

As discussed above, Saito does not disclose or suggest applicants' composite particle. The methods of preparation are different, the resulting structures are different, and the properties are different.

Iwamoto was cited for the disclosure of solid electrolytes for lithium batteries. The Office has not alleged that Iwamoto discloses anything about the formation or structure of composite particles or their use in non-aqueous electrolyte secondary batteries.

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The Office has not made the *prima facie* case. Composite particles as recited in applicants' claims are not disclosed or suggested by Saito. Therefore, combination of the references in the manner indicated by the Office does not produce applicants' invention because composite particles as recited by applicants' claims are missing from the combination. The rejection of claims 8 and 9 as unpatentable over Saito in view of Iwamoto should be withdrawn.

### Conclusion

It is respectfully submitted that the claims are in condition for immediate allowance and a notice to this effect is earnestly solicited. The Examiner is invited to phone applicants' attorney if it is believed that a telephonic or personal interview would expedite prosecution of the application.

Respectfully submitted,

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